Service: Multi-Protocol Label Switching (MPLS) - Non-Managed

Service Line: Network Communications

Status: Available

General Description:

Multi-Protocol Label Switching (MPLS) is a data transport method that allows agencies to connect to the GTA mainframe directly to the customer's data center, the Internet and other applications to conduct state business. This service is stable, reliable, secure and flexible. It is a fully meshed network in compliance with the latest convergence technology. It is scalable to any office size and needs, and it accommodates various access methods such as Frame Relay, DSL, Metro Ethernet, Private Line and ISDN. MPLS is supported by skilled GTA and BellSouth technicians and engineers.

MPLS Non-Managed service is available to customers who already own and maintain their own routers and have very specific network requirements. Non-Managed service includes connection to the fully meshed network, "24 x 7" monitoring (up to the customer's network demarcation only) and network architecture technology refresh. The MPLS Non-Managed service offering is limited in scope because GTA does not have "visibility" into the customer's router. The Non-Managed customer does not have access to network management tools or reports.

The basic design of the MPLS network allows each customer's data traffic to travel a Virtual Private Network (VPN) path from the point of entry into the network to the final destination. Agencies can control which of their offices are allowed to communicate with other agency offices and those that must maintain complete separation. MPLS VPNs will direct data traffic to specific applications hosted by GTA or the customer's data center. Data traffic to GTA's Internet service will be channeled to GTA's firewalls. The architecture is designed to provide increased performance, flexibility, security and scalability, while providing the end user with seamless connectivity to the network.

The MPLS network is designed and constructed to accommodate data, voice (VoIP), multimedia and video over the same access circuit. One MPLS option allows Quality of Service (QoS) tagging to prioritize traffic type based upon customer specifications and needs. The customer is GTA's partner in determining the final design of the customer's network based on its financial and technical needs. As the customer's requirements change, so can its network, with minimal disruption and expense.

Service Level Targets:

MPLS is designed for 99.999% accuracy at the core. A four-hour mean time to repair (MTTR) is standard practice for access circuits other than DSL. A 48-hour mean time to repair (MTTR) is standard practice for DSL (see "Service Level Objectives" in "Other Information").

Availability:

- 24 hours a day, seven days a week, 365 days a year
- Basic Service Level Support, 24 hours for network support services
- Statewide

Limitations:

- GTA can only guarantee the quality of network services up to the demarcation point on the customer's premise.
- GTA will only be able to see up/down status for Frame Relay and Private Line Services and will have no visibility of up/down status for DSL.

Prerequisites:

- GTA engineers must conduct a site survey to determine local needs, followed by a design session with the customer.
- The customer must own and maintain its own routers and be equipped with the correct interface cards to accommodate the selected access circuit.

Pricing / Charges:

Please contact the GTA Office of Solutions Marketing at 404-651-6964 or gtasolutionsmrktg@gta.ga.gov to be put in touch with your GTA Account Manager, who will work to obtain specific pricing for your requirements. Charges depend on the access method selected and other technical factors including bandwidth requirements and agency-specific access needs. Pricing will be quoted as a fixed monthly charge based on the access circuit type and service level.

Service Components or Product Features Included in Base Price:

- Choice of access circuit connectivity type
- Coordination of circuit installation and router set-up requirements
- 24 x 7 Network Operations and Security Center support
- Centralized alarm and alert management
- Problem and incident management
- Data transport and delivery security compliance
- Mean time to repair (MTTR) guarantees
- Periodic access circuit review

Options Available for an Additional Charge:

- Redundant access circuit
- Alternate access service in the event of loss of primary (physical) service address. Details will be worked out as part of Service Agreement Schedule.
- Fully managed connectivity

Service Components or Product Features Not Included:

- Agency-specific centralized firewall services
- Quality of Service (QoS)
- VPN encryption
- Service performance reporting

What GTA Provides:

- GTA MPLS network connections
- Coordination of installation
- Secure Internet services
- VLANS
- Network ACLs
- Network Operations and Security Center
- Ordering and provisioning tools
  - This support assists the customer with ordering, trouble reporting and periodic access circuit review.

Additionally, GTA will be responsible for:

- Coordinating on-site access circuit installations and circuit activations
- Tracking all open trouble tickets and reporting status of issues back to the customer
- Network performance tuning, monitoring and troubleshooting up to the on-site network demarcation point
- Performing incident, change, problem and request management reporting and tracking.
- Coordinating service requests with other GTA support teams
- System and security auditing - Ensuring that the MPLS network complies with current GTA enterprise security policies
- Monitoring of alarms, alerts and performance degradation up to the on-site demarcation point from a centralized location only
- Managing requests for moves, adds, changes and deletions of access circuits
- Managing all Service Level Agreements and remedies on behalf of all customers
- Developing communications related to changes to the MPLS network that may affect the customer's operating environment; gaining approval from customer management before changes are implemented

What the Customer Provides:

- Provide all public IP Addresses to be used in customer's MPLS Network (BellSouth will assign addresses from the agency-provided pool of IP Addresses)
- Provide routing from Customer-edge routers (customer-provided) to provider-edge routers via MPLS supported protocols
- Configure and maintain all Customer-owned devices on Customer's network
- Provide input as to overall operations needs and requirements including number of users per site, bandwidth requirements (if known), security requirements, growth estimates, traffic destinations, on site contact information and a secure and environmentally sound equipment room.

Additionally, the customer will be responsible for:

- Maintaining all necessary internal business case approvals
- Customer-owned and maintained router(s) with correct WAN interface cards and operating system versions
- Insuring that the customer-owned router(s) meets the necessary requirements to interconnect to the MPLS network, which may require modifications that the customer would need to acquire
- Initiating first level (Tier 1) of troubleshooting before reporting network issues to GTA (i.e., to eliminate customer-owned routers, LANs and/or firewall issues)
- Reporting service outages for DSL circuits because of GTA's inability to manage the customer's premise router
- Providing customer escalation and notifications paths and contact information for communicating about incidents associated with the application
- Designating an owner and appropriate team members responsible for participating in design sessions
- Providing capacity planning requirements (trends, new requirements, etc.) on a quarterly basis
- Providing free and clear access to MPLS network demarcation point
- Monthly recurring charge for out-of-band management line

Joint responsibilities (GTA and Customer):

The customer and GTA will work together to:

- Participate in initial design sessions and technology refresh sessions on a quarterly basis if needed.

- Participate in monthly meetings and other meetings as required to discuss operational issues.

- Initiate escalation to the next level of management in the event of any dispute regarding this service, if a resolution at the lower level cannot be achieved.

- Exchange communications between parties that may affect service.

Service Support:

- Access available 24 hours a day, 7 days a week, 365 days a year to GTA Network Operations and Security Center: 404-463-3600
- Installation coordination and issue resolution
- Service reviews

Service Issue Escalation:

GTA offers service issue escalation in support of MPLS network services. GTA has established escalation procedures and corresponding contacts for all issues pertaining to the delivery of superior service to its customers. GTA operates "24 x 7" support and offers level-two and level-three (Tier 2 and Tier 3) support to its customers. GTA also has immediate access to BellSouth's 24 x 7 Network Operations Center as GTA's Tier 3 support.

Function	GTA Contact	GTA Contact Info
Trouble reporting for network management	Incident Management Group	24 x 7 reporting 404-463-3600
Trouble reporting for DSL remote users	GTA Solutions Support-LAN Desk Top Support	6:30 a.m. to 6:00 p.m. 404-749-2150

Benefits / Advantages:

The MPLS network is truly a state-wide, fully meshed, secure network that accepts many types of access circuit choices (it is "network agnostic"). Pricing for monthly service includes access circuit installation coordination, access, access circuit maintenance, support, monitoring and built in technology refresh. Upgrading services is accomplished easily. Conversion from legacy networks to MPLS technology is virtually transparent to the customer, and the results are easy to measure.

Disadvantages:

See "Features and Benefits of Managed vs. Unmanaged Router Service" in "Other Information."

How to Start this Service:

Contact the Office of Solutions Marketing at 404-651-6964 or gtasolutionsmrktg@gta.ga.gov to be put in touch with your GTA Account Manager.

Related Services and Products:

- MPLS Managed Services
- VPN (Virtual Private Network) Secure Socket Layer (SSL) and Internet Protocol Security (IPSec)
- Voice over Internet Protocol (VoIP)
- Televideo services
- MPLS Remote Services (Telework initiatives)
- Managed Firewall Services
- Wireless

Terms and Definitions:

24 x 7 — 24 hours a day, 7 days a week, 365 days a year
DSL — Digital Subscriber Line
ISDN — Integrated Services/Digital Network
MPLS — Multi-Protocol Label Switching
MTTR — Mean-Time-To-Repair
SLOs — Service Level Objectives
VPN — Virtual Private Network

Other Information:

Service Level Objectives

Core Availability	GTA and BellSouth MPLS	24 x 7 99.999% percent
Service Support	MPLS Access Circuit	24 x 7 support from GTA Network Operations and Security Center
Monitoring	All network elements are monitored and trouble tickets will be opened if a problem is detected	24 x 7 basis

	Emergency (major impact to users, network unavailable or not functioning)	
Resolution time for incidents (mean time to repair or MTTR)	High (affects the users but workarounds are available; some functionality may be lost to the users)	• Fewer than four hours within the core • Fewer than four hours for Frame Relay, Private Line and ATM • 48 hours "best-effort" basis for DSL access circuits
	Medium (low impact to users)	
	Low (does not affect users)	
	Acknowledgement of requests for MACDs (excluding weekends and holidays)	No target
Administrative process response time	Acknowledgement (response back to customer to confirm Service Order was received and accepted)	Within 2 business days
	Installation interval for new service; Frame Relay, DSL access circuit types	30 calendar days (from time of properly prepared order)
	Installation interval for new service; ISDN, T-1 Private Line access, Metro Ethernet, ATM, DS-3, OC x circuit types	45 – 90 calendar days (from time of properly prepared order; 90 calendar days for complex buildout)
	New site: (new facilities non-complex; buildout non-complex)	45 calendar days
	Relocation	6 weeks advance notification to GTA
	Service window (use for planning purposes)	30 – 90 calendar days from time of properly prepared order to time service is available
	Note: MPLS installation intervals during conversion project: When legacy-to-MPLS conversion project is complete, the standard intervals above take affect. Until complete, all installation intervals will be negotiated with each customer.	
Routine and emergency maintenance notifications	Outage reports must be in the Service Center and/or Georgia Remedy System	Standard GTA Change Notifications. 15 minutes for emergency maintenance situations

	Customer-initiated emergency maintenance must be reported	Within 2 hours
	Scheduled maintenance must be reported (non-complex)	At least four hours in advance
	Scheduled maintenance must be reported (complex-possible service affecting multiple sites)	At least 48 hours in advance (weekends and holidays not included)
Incident Management	For routine incidents	GTA will follow MTTR practices to resolve all incidents within 48 hours, normal business days, Monday - Friday, 8 a.m. - 5 p.m. (specific MTTR applies for each access circuit type and MPLS core); if exceeded, applicable escalation procedures are followed.
	Prolonged event	GTA observes an objective of 10 minutes to allow the circuits to self-heal from a minor service disruption. If service is not restored in the allotted time, problem analysis begins and applicable escalation procedures are followed.
	During GTA standard hours of service, GTA and BellSouth technical support will update the Command Center regarding any incidents that cannot be resolved within the allotted SLA for access circuit type and MPLS core.	The customer will be notified every 15, 30 or 60 minutes depending on the severity level and resolve time exceeded.
	During off-hours of service, GTA technical support will update the ServiceCenter problem ticket.	"Best effort"

Features and Benefits of Managed vs. Unmanaged Router Service

BellSouth MPLS	Managed	Unmanaged	Additional Benefits of Managed
Service Level Agreements (SLAs)	Service Level Agreements with GTA on: • MTTR (<4 Hrs.) • Latency (<80ms) • Packet Loss (<2%) • Outage Notification (<15 minutes)	Only available for uptime, downtime on Private Line, Frame Relay and ATM. DSL has no SLAs for the local loop (target repair time is 48 hours after trouble is called in by customer).	GTA/BellSouth has contracted SLAs on each managed site, which prioritizes repair of managed sites before unmanaged sites.
Network Management Reports	Web access to InfoVista reports on network utilization, packet loss, latency on access circuits to provide end-to-end views into network performance. Web access to NetCool alarms to view status of each circuit and router at each agency location. Access to trouble ticket reports.	No access to reports.	BellSouth develops and maintains hardware, software and hosting of network management systems through GTA. Agency only needs web browser to access BellSouth Network Operations Center systems to validate and view information seen by BellSouth NOC.
Router Maintenance	BellSouth provides full break/fix maintenance, Cisco SMARTnet maintenance on routers for hardware and software including 4-hour on-site repair maintenance.	Agency must pay for own maintenance of routers and fix all routers.	Agency has single point of contact for all site WAN issues. Eliminates finger-pointing between local network vendor, IXC network vendor, router vendor, agency router technicians, etc. BellSouth has full responsibility for repairs of all WAN services.
Router configuration	BellSouth stages, configures, project	Agency will probably need to purchase,	Eliminates major projects for router

	manages and installs all new routers for MPLS services. All router configurations are stored and archived in the event of a router failure. Configuration updates required are handles by BellSouth including any additional hardware needed for IOS upgrades. BellSouth installs all hardware required for upgrades. Router configuration changes requested by agency performed by BellSouth within contracted timeframes. Configurations are stored in Cisco element managers that allow BellSouth to quickly backup and if necessary restore configurations to any managed device.	configure, install and coordinate installation of routers with BellSouth. New routers and/or WAN interface cards will be required for DSL if used at DOL sites. Any IOS upgrades required will be the responsibility of the agency.	installations and upgrades at all agency sites. BellSouth engineers are experienced with MPLS implementations.
Quality of Service for Voice/Video	BellSouth will configure routers properly to support QoS for voice, video and mission-critical applications. BellSouth requires managed routers for sites needing QoS to commit to providing service level guarantees.	Agency will need to properly configure, manage and support routers for QoS. Issues with latency, jitter and packet loss causing poor quality of voice and video transport will be the responsibility of agency if the	BellSouth does not recommend any QoS on unmanaged sites, as BellSouth would have no way to validate and track issues end-to-end. BellSouth deploys probe technology on each router to continuously view QoS metrics on

		network appears to be operating properly.	managed sites. Alarms are generated when SLA metrics are violated, to ensure proper QoS for voice and video.
Proactive Monitoring of Service Degradation Prior to Outage Occurring	GTA/BellSouth provides total trouble isolation and resolution (transport, core network and inside the router itself). BellSouth will begin proactively troubleshooting issues related to service degradation before an outage occurs. Examples include processors becoming over-utilized, buffer overloads reaching certain thresholds or latency exceeding certain thresholds. These metrics often indicate issues about circuit problems prior to an outage.	GTA/BellSouth will only see up/down status of Unmanaged sites with either Frame Relay or Private Line Services. No additional metrics are captured that would indicate service degradation prior to a site being out.	Agency will have to contact GTA when a site goes down or service degrades. Little can be done with sites where service is degrading for unmanaged sites, since no metrics will exist on the access circuit or router.
Proactive Notification and Repair of DSL Sites	BellSouth will proactively alarm and repair DSL sites if DSL goes down or service degrades.	BellSouth has no visibility into DSL outages until the customer calls to open a ticket.	Significant time is lost for DSL sites when they go down.
Out-of-Band Management	BellSouth uses out-of-band modems and phone lines to troubleshoot router issues remotely, should service degrade or a site is out of service. GTA provides lines and extends	Agency must maintain and test out-of-band modem lines at each site if desired.	Provides secondary method of managing sites in the event of outage and includes auditing of sites to ensure out-of-band connectivity.

	demarcations to router rooms. BellSouth installs and maintains modems at each site. BellSouth tests out-of-band modem lines quarterly to ensure lines are installed, operational and not attached to other devices at the site causing management issues.		